

CLAIMS

I/we claim:

1. A low-noise liquid distribution system for delivering a liquid to a user, the liquid distribution system comprising:

5 a reservoir comprising:

a reservoir lower wall; and

a reservoir continuous side wall extending upwardly from the reservoir lower wall to thereby form, together with the reservoir lower wall, a reservoir interior that is exposed to atmosphere for holding and distributing a first quantity of liquid to a user;

10 a tank oriented in an inverted position over the reservoir, the tank comprising:

a tank upper wall;

a tank continuous side wall extending downwardly from the tank upper wall;

15 a tank lower wall extending from the tank continuous side wall to thereby form, together with the tank upper wall and the tank continuous side wall, a tank interior into which liquid is received;

an opening located in at least one of the tank walls for distributing a second quantity of liquid under gravity from the tank to the reservoir; and

a vent tube having an inlet end that is located outside of the tank and an outlet end that is located in the tank interior;

20 whereby when the opening and the vent tube are at, or immersed below, a level of liquid in the reservoir, liquid is held in the tank by a combination of vacuum pressure acting on the liquid in the tank and atmospheric pressure acting on the liquid in the reservoir, and when at least the vent tube is above the level of liquid in the reservoir, the vacuum within the tank is broken and air travels into the tank interior by way of the vent tube, to thereby deliver the

second quantity of liquid from the tank to the reservoir without forming air bubbles and noise associated therewith.

2. A liquid distribution system according to claim 1, wherein the inlet end of the vent tube is positioned above the opening.

5 3. A liquid distribution system according to claim 2, and further comprising a neck portion extending from one of the tank lower wall and the tank continuous side wall, with the opening comprising a mouth at a distal end of the neck portion.

4. A liquid distribution system according to claim 3, wherein the outlet end of the vent tube is located adjacent the upper wall of the tank above a level of liquid in the tank.

10 5. A liquid distribution system according to claim 2, wherein the outlet end of the vent tube is located adjacent the tank upper wall above a level of liquid in the tank.

6. A liquid distribution system according to claim 1, wherein the outlet end of the vent tube is located adjacent the tank upper wall above a level of liquid in the tank.

15 7. A liquid distribution system according to claim 1, and further comprising a neck portion extending from one of the tank lower wall and the tank continuous side wall, with the opening comprising a mouth at a distal end of the neck portion.

20 8. A liquid distribution system according to claim 1, and further comprising a first valve positioned in one of the vent tube and the opening for preventing unwanted escape of liquid out of the tank at least during inversion of the tank from an upright position toward the inverted position.

9. A liquid distribution system according to claim 8, and further comprising a second valve positioned in the other of the vent tube and the opening for preventing unwanted escape of liquid out of the tank at least during inversion of the tank from the upright position toward the inverted position.

10. A liquid distribution system according to claim 9, wherein the reservoir comprises first and second protrusions for contacting and opening the first and second valves, respectively, when the tank is inverted and properly positioned over the reservoir.

11. A liquid distribution system according to claim 8, wherein the reservoir
5 comprises a first protrusion for contacting and opening the first valve when the tank is inverted and properly positioned over the reservoir.

12. A liquid holding and distribution tank for a liquid distribution system having a reservoir for holding and delivering liquid from the tank, the tank comprising:

an upper wall;

10 a continuous side wall extending downwardly from the upper wall;

a lower wall extending from the continuous side wall to thereby form, together with the upper wall and the continuous side wall, an interior into which liquid is received;

an opening located in at least one of the walls for distributing a quantity of liquid from the tank under gravity to the reservoir; and

15 a vent tube having an inlet end that is located outside of the tank and an outlet end that is located in the tank interior;

wherein air flow through the vent tube prevents formation of air bubbles in the opening when the quantity of liquid exits the tank through the opening.

13. A liquid holding and distribution tank according to claim 12, wherein the inlet
20 end of the vent tube is positioned above the opening.

14. A liquid holding and distribution tank according to claim 13, and further comprising a neck portion extending from one of the tank lower wall and the tank continuous side wall, with the opening comprising a mouth at a distal end of the neck portion.

15. A liquid holding and distribution tank according to claim 14, wherein the outlet end of the vent tube is located adjacent the upper wall above a level of liquid in the tank.

16. A liquid holding and distribution tank according to claim 13, wherein the outlet end of the vent tube is located adjacent the upper wall above a level of liquid in the tank.

5 17. A liquid holding and distribution tank according to claim 12, wherein the outlet end of the vent tube is located adjacent the upper wall above a level of liquid in the tank.

18. A liquid holding and distribution tank according to claim 12, and further comprising a neck portion extending from one of the tank lower wall and the tank continuous side wall, with the opening comprising a mouth at a distal end of the neck portion.

10 19. A liquid holding and distribution tank according to claim 12, and further comprising a first valve positioned in one of the vent tube and the opening for preventing unwanted escape of liquid out of the tank at least during inversion of the tank from an upright position toward an inverted position.

15 20. A liquid distribution system according to claim 19, and further comprising a second valve positioned in the other of the vent tube and the opening for preventing unwanted escape of liquid out of the tank at least during inversion of the tank from the upright position toward the inverted position.

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